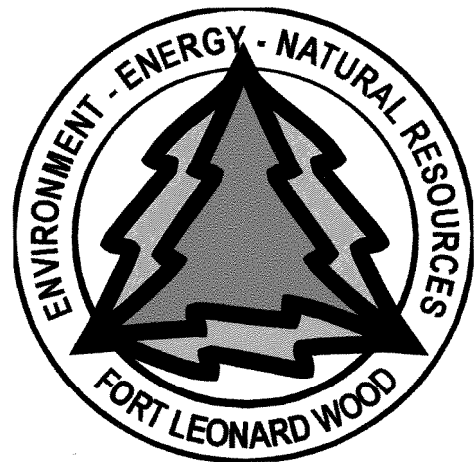

ENVIRONMENTAL ASSESSMENT

PRIVATIZATION OF ELECTRIC UTILITIES

U.S. Army Maneuver Support Center
and
Fort Leonard Wood, Missouri



August 2001

NOTICE OF AVAILABILITY
ENVIRONMENTAL ASSESSMENT: PRIVATIZATION OF ELECTRIC UTILITIES
U.S. ARMY MANEUVER SUPPORT CENTER
AND FORT LEONARD WOOD, MISSOURI

Agency: United States Army, Department of the Army (DA)

Action: Notice of Availability of the Environmental Assessment (EA) of Privatization of Electric Utilities at Fort Leonard Wood, Missouri.

Summary: An EA for the Privatization of Electric Utilities at Fort Leonard Wood, Missouri has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500 *et seq.*, and Army Regulation (AR) 200-2. This EA evaluates potential environmental consequences of each alternative considered, including the No Action Alternative (Alternative 1), and Privatization of Electric Utilities (Alternative 2). Consequences of the two alternatives were evaluated with regard to effects to the ecology of the area, human health and safety, socio-economic values, and cultural resources. Environmental effects of each alternative were identified during the preparation of the EA, which included a review of relevant literature, site visits, and interviews.

The EA concludes that there would be no significant effects to resources under any of the Alternatives. Under Alternative 1, the No Action Alternative, the quality of public utility service may be directly and negatively affected. Anticipated effects are not significant. Also under the No Action Alternative, minor, short-term adverse effects from soil erosion may occur during digging operations that support line maintenance. In addition, implementation of Alternative 1 (the No Action Alternative), would not meet base objectives or current U.S. Army mandates.

Under Alternative 2, the Proposed Action, there would be no significant effect to ecological resources, human health and safety, socio-economics, or cultural resources, in part because current levels of resource protection and management would remain in place. Alternative 2 is expected to affect individuals currently employed to operate and maintain the electric utility system at FLW. This potentially adverse effect is not significant at the local or regional scale because approximately the same number of employees will be needed from the private sector before and after privatization. The quality of public utility service may be directly and beneficially affected by implementation of Alternative 2, the Proposed Action. Potential adverse

effects to soils from erosion during repair of buried electric lines would be minor and short-term. Alternative 2 is the Proposed Action because it best meets the purpose and need for the action.

Dates: A 30-day public review and comment period commences with the publication of this notice. A copy of the EA and FNSI is available for review via the Internet at <http://www.wood.army.mil>, or may be obtained by contacting Mr. Alan Gehrt, Project Manager, Kansas City District, U.S. Army Corps of Engineers, 700 Federal Building, 601 East 12th Street, Kansas City, Missouri 64106-2896. Questions may be directed to Mr. Gehrt by mail or by calling telephone number 816-983-3142. Written comments on the EA should be submitted within the 30-day review period to Mr. Alan Gehrt.

FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT: PRIVATIZATION OF ELECTRIC UTILITIES
U.S. ARMY MANEUVER SUPPORT CENTER
AND FORT LEONARD WOOD, MISSOURI

Proposed Action. The Proposed Action is to privatize the electric utilities at the U.S. Army Maneuver Support Center and Fort Leonard Wood, Missouri (FLW). These utilities are currently owned and operated by the federal government, which has identified cost-efficiency issues associated with their continued operation and maintenance. The Proposed Action is consistent with Department of the Army Memorandum DAIM-FDF-U (420-49) of December 1997 that mandates privatization of army-owned utility systems.

The U.S. Army at FLW proposes to divest of the electric utility and transfer ownership and operation to a private utility company. The Proposed Action includes sale of all infrastructure associated with these utilities. Land beneath or above distribution lines and substations would not be sold, but would be divested through easement, lease, or permit for access to the utilities. The precise schedule for implementing the proposed action is not known at this time.

The electric utility system includes four substations, approximately 252 miles of above-ground 12.5 kV distribution lines, and approximately eight miles of underground 12.5 kV distribution lines. The system also includes approximately 1380 transformers and approximately 3800 street lights and poles. The width of the easement to be granted has not yet been precisely determined, but is assumed to be a typical utility easement width of 30 to 40 feet. The Installation will also retain ownership and responsibility for the electric distribution system within approximately five feet of structures and within all buildings; the precise lines of demarcation that will be used to identify ownership are described in the Environmental Screening Document for Utilities Privatization, Electric Distribution System at Fort Leonard Wood, Missouri (BHE 2000).

This Finding of No Significant Impact (FNSI) is based upon the Environmental Assessment (EA) prepared for privatization of electric utilities at Fort Leonard Wood, Missouri. A comprehensive review of probable environmental consequences resulting from privatization of electric utilities on the Installation is documented in the EA. The EA is incorporated by reference in this FNSI and is available for public review as an attachment to this FNSI.

Alternatives Considered. An alternative to the Proposed Action (Alternative 2) is the No Action Alternative (Alternative 1). In this Alternative the electric utility system would not be privatized, and Army activities in the proposed project area would continue as currently executed, where currently located, and as defined in the Ongoing Mission Master Plan (HBA 1995a).

Scope Limitations. The final EA is limited to evaluation of effects of privatization of electric utilities at Fort Leonard Wood. It does not evaluate the breadth of the ongoing mission at FLW.

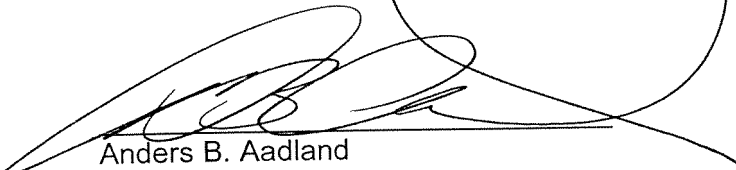
Summary of Environmental Consequences. Environmental effects of each alternative were identified during the preparation of the EA, which included a review of relevant literature, site visits, and interviews, followed by an assessment of effects. In this EA, four categories were broadly used to address the components of the environment: the ecology of the area, human health and safety, socio-economic values, and cultural resources.

Under Alternative 1, the No Action Alternative, the quality of public utility service may be directly and negatively affected. Anticipated effects are not significant. Also under the No Action Alternative, minor, short-term adverse effects from soil erosion may occur during digging operations that support line maintenance. In addition, implementation of Alternative 1 (the No Action Alternative), would not meet base objectives or current U.S. Army mandates.

Under Alternative 2, the Proposed Action, there would be no significant effect to ecological resources, human health and safety, socio-economics, or cultural resources, in part because current levels of resource protection and management would remain in place. Alternative 2 is expected to affect individuals currently employed to operate and maintain the electric utility system at FLW. This potentially adverse effect is not significant at the local or regional scale because approximately the same number of employees will be needed from the private sector before and after privatization. The quality of public utility service may be directly and beneficially affected by implementation of Alternative 2, the Proposed Action. Potential adverse effects to soils from erosion during repair of buried electric lines would be minor and short-term.

Decision. After consideration of the Proposed Action and its Alternative and associated effects of these actions, I have determined that no significant impacts will occur as a result of these actions, and that an Environmental Impact Statement is not required to proceed with implementation of privatization of electric utilities at Fort Leonard Wood. I am selecting for implementation Alternative 2, as it best meets the purpose and need for the action.

Public Review and Comment Period. A copy of the EA and FNSI is available for review via the Internet at <http://www.wood.army.mil>, or may be obtained by contacting Mr. Alan Gehrt, Project Manager, Kansas City District, U.S. Army Corps of Engineers, 700 Federal Building, 601 East 12th Street, Kansas City, Missouri 64106-2896. Questions or comments regarding this decision may be directed to Mr. Gehrt by mail, or by calling telephone number 816-983-3142. The deadline for receipt of comments is 30 calendar days after the initial publication of the Notice of Availability (NOA) for this action is placed in local newspapers.



Anders B. Aadland
Major General, US Army
Commander
U.S. Army Maneuver Support Center

11 OCT 2001

Date Signed

FINAL

ENVIRONMENTAL ASSESSMENT

PRIVATIZATION OF ELECTRIC

UTILITIES

U.S. Army Maneuver Support Center
and
Fort Leonard Wood, Missouri

August 2001

Final

Environmental Assessment:

Privatization of Electric Utilities
at the
U.S. Army Maneuver Support Center
and
Fort Leonard Wood, Missouri

Prepared for:
Kansas City District
U.S. Army Corps of Engineers
Kansas City, Missouri

Prepared by:
BHE Environmental, Inc.
11733 Chesterdale Road
Cincinnati, OH 45246
Telephone: (513) 326-1500

Notice: This report has been prepared by BHE Environmental, Inc. solely for the benefit of its client in accordance with an approved scope of work. BHE assumes no liability for the unauthorized use of this report or the information contained within by a third party. Copyright © 2001 BHE Environmental, Inc.

Summary

This Environmental Assessment (EA) evaluates effects of privatizing the electric utilities at the U.S. Army Maneuver Support Center and Fort Leonard Wood, Missouri (FLW). The electric utility system is currently owned and operated by the federal government, which has identified cost-efficiency issues associated with the continued operation and maintenance of this utility. The U.S. Army at FLW proposes to divest of the electric utility system and transfer ownership and operation to a private utility company. The proposed action includes sale of all infrastructure associated with these utilities. Land beneath or above distribution lines and substations would not be sold, but would be divested through easement, lease, or permit for access to the utilities. The precise schedule for implementing the proposed action is not known at this time.

The proposed action is consistent with Department of the Army Memorandum DAIM-FDF-U (420-49) of December 1997 that mandates privatization of army-owned utility systems. It is also consistent with the nation-wide *Programmatic Environmental Assessment* prepared for utilities privatization at 17 installations (U.S. Army TRADOC 1999). This EA is prepared in accordance with the National Environmental Policy Act of 1969, 40 CFR 1500-1508, and Army Regulations AR 200-1 and 200-2. Alternative to the Proposed Action is the No Action Alternative. These Alternatives are described below.

- No Action (Alternative 1) – The electric utilities would not be privatized, and Army activities in the proposed project area would continue as currently executed, where currently located, and as defined in the Ongoing Mission Master Plan (HBA 1995a).
- Proposed Action (Alternative 2) – Electric utilities FLW would be privatized. This system includes four substations, approximately 252 miles of above-ground 12.5 kV distribution lines, and approximately eight miles of underground 12.5 kV distribution lines. The system also includes approximately 1380 transformers and approximately 3800 street lights and poles. All utility infrastructure would be sold to one or more private entities. Lands associated with the distribution system would be transferred via easement, lease, or permit. No land will be sold under the Proposed Action.

The width of the easement to be granted has not yet been precisely determined, but is assumed to be a typical utility easement width of 30 to 40 feet. The Installation will also retain ownership and responsibility for the electric distribution system within five feet of structures and within all buildings. The precise lines of demarcation that will be used to identify ownership are described in the Environmental Screening Document for Utilities Privatization, Electric Distribution System at Fort Leonard Wood, Missouri (BHE 2000).

Key issues identified during the Environmental Assessment process focus upon concerns for protection of soils, endangered species, human health and safety, socio-economic values, and cultural resources at FLW. Under Alternative 1, the No Build Alternative, the quality of public utility service may be directly and negatively affected. Anticipated effects are not significant. Also under the No Action Alternative; minor, short-term adverse effects from soil erosion may occur during digging operations that support line maintenance. In addition, implementation of Alternative 1 (the No Action Alternative), would not meet base objectives or current U.S. Army mandates.

Under Alternative 2, the Proposed Action, there would be no significant adverse effects to ecological resources, human health and safety, socio-economics, or cultural resources, in part because current levels of resource protection and management would remain in place. Alternative 2 is expected to affect individuals currently employed to operate and maintain the electric utility system at FLW. This potentially adverse effect is not significant at the local or regional scale because approximately the same number of employees will be needed from the private sector before and after privatization. Potential adverse effects to soils from erosion during repair of buried electric lines would be minor and short-term.

Table of Contents

	<u>Page</u>
SECTION 1.0: INTRODUCTION.....	1
1.1 Scope of this Environmental Assessment.....	1
1.2 Location of Fort Leonard Wood	2
1.3 Regulatory Authority.....	5
SECTION 2.0: PURPOSE AND NEED	9
2.1 Purpose and Need	9
2.2 Public Scoping	9
SECTION 3.0: PROPOSED ACTION	11
3.1 Description of the Proposed Action.....	11
3.2 Description of Affected Utilities	12
SECTION 4.0: DESCRIPTION OF THE ALTERNATIVES	15
4.1 Development of the Alternatives	15
4.2 Description of the Alternatives.....	16
4.2.1 Alternative 1 – Do not Privatize (No Action).....	17
4.2.2 Alternative 2 – Privatize Electric Utilities (Proposed Action)	17

SECTION 5.0: AFFECTED ENVIRONMENT	19
5.1 Setting and Facilities	19
5.2 Ecology	20
5.2.1 Geology	20
5.2.2 Soils	20
5.2.3 Rivers and Wetlands	21
5.2.4 Groundwater	21
5.2.5 Flora and Fauna	22
5.2.6 Threatened and Endangered Species	23
5.3 Human Health & Safety	26
5.4 Socio-Economics	27
5.5 Cultural Resources	28
SECTION 6.0: ENVIRONMENTAL CONSEQUENCES	31
6.1 ANALYSIS OF THE ALTERNATIVES	31
6.2 Alternative 1 - No Action	32
6.2.1 Ecology	32
6.2.2 Health & Safety	35
6.2.3 Socio-Economics	36
6.2.4 Cultural Resources	36
6.2.5 Cumulative Effects of Alternative 1	36
6.3 Alternative 2 – Privatize Electric Utilities (Proposed Action)	37
6.3.1 Ecology	37
6.3.2 Health & Safety	41
6.3.3 Socio-Economics	41
6.3.4 Cultural Resources	42
6.3.5 Cumulative Effects of Alternative 2	43
SECTION 7.0: CONCLUSIONS	47
7.1 Alternative 1	47
7.2 Alternative 2	47
7.3 Summary of the Alternatives	48
SECTION 8.0: PERSONS AND AGENCIES CONTACTED	51
SECTION 9.0: LITERATURE CITED	53
APPENDIX A: MAPS OF ELECTRIC UTILITY INFRASTRUCTURE AT FORT LEONARD WOOD	

List of Tables

	<u>Page</u>
TABLE 3-1. Inventory of electric utility infrastructure to be privatized at Fort Leonard Wood.	12
TABLE 6-1. Evaluation criteria used to compare alternatives for effects to key resources.	32
TABLE 6-2. Measures in current FLW management Plans that protect resources potentially affected by the Proposed Action.	45
TABLE 7-1. Comparison of environmental consequences by alternative and resource area.	49

List of Figures

	<u>Page</u>
FIGURE 1-1. Location of Fort Leonard Wood, Missouri.	3
FIGURE 1-2. Boundaries of Fort Leonard Wood, Missouri.....	7

Abbreviations and Acronyms

ACHP	Advisory Council on Historic Preservation
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
BA	Biological Assessment
BHE	BHE Environmental, Inc.
BMP	Best Management Practices
BMZ	Bat Management Zone
BO	Biological Opinion
BRAC	Base Realignment and Closure (Defense Base Closure and Realignment Act of 1990, Base Closure act of 1990)
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Cleanup, and Liability Act
CFR	Code of Federal Regulations
COE	Corps of Engineers
CWA	Clean Water Act
DA	Department of the Army
DoD	Department of Defense
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EIS	Environmental Impact Statement
ESA	Endangered Species Act

Section 1.0: Introduction

1.1 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) evaluates effects of privatizing the electric utilities at Fort Leonard Wood, Missouri (FLW). In this context, privatizing specifically means to sell the infrastructure. Lands above or beneath electric distribution lines will be divested by permit, lease, or easement for a non-federal party to operate and maintain the utilities. Operating the utilities includes routine maintenance activities and non-significant improvements and repairs.

This EA evaluates the effects of the Proposed Action and one Alternative (the No Action Alternative) upon the natural and physical components of the human environment (40 CFR 1508.8). This includes potential direct, indirect and cumulative impacts to soil, water, air, endangered species, historic, cultural, social, and economic values. In this EA, the following four categories are broadly used to address these components of the environment:

- 1) the ecology of the area,
- 2) human health and safety,
- 3) socio-economic values, and
- 4) cultural resources.

All post-privatization land use practices will be in accordance with the Installation's Ongoing

ESD	Environmental Screening Document
ESMP	Endangered Species Management Plan
FLW	Fort Leonard Wood
HBA	Harland Bartholomew & Associates, Inc.
ICRMP	Integrated Cultural Resource Management Plan
INRMP	Integrated Natural Resources Management Plan
MDC	Missouri Department of Conservation
MDNR	Missouri Department of Natural Resources
MOA	Memorandum of Agreement
NAGPRA	Native American Grave Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
MO	Missouri
OM	Ongoing Mission
PCB	Polychlorinated biphenyl
PEA	Programmatic Environmental Assessment
PEI	Phenix Environmental, Inc.
POW	Prisoner of War
SHPO	State Historic Preservation Officer
SPCC	Spill Prevention Control and Countermeasure
T&E	Threatened and Endangered
TRADOC	Training and Doctrine Command
USACERL	U.S. Army Construction Engineering Research Laboratory
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WES	U.S. Army Corps of Engineers Waterways Experiment Station (WES)
WWII	World War II

Mission Master Plan EA (HBA, 1995b) and Integrated Natural Resources Management Plan (INRMP; FLW 2000). All management plans and regulatory constraints described in these documents will remain in place, and all private entities operating within FLW boundaries will abide by these plans and constraints. Any actions (federal or private) not addressed by the Ongoing Mission Master Plan, the INRMP, or other current regulations or plans at FLW are outside the scope of this EA.

Future major improvements or expansions of the divested utilities beyond existing corridors and facilities are also outside the scope of action analyzed in this EA. For example, changes such as replacing aerial electric lines with underground lines and extensions of the utilities to serve new areas are outside of the scope of this EA, as they are not identifiable at the present time.

Existing conditions regarding noise and air quality on FLW were assessed and determined to have minimal relevance to this analysis. Because neither the proposed action nor the alternative will generate noise that would affect the human environment, this issue is not analyzed in detail. Similarly, it was determined that actions at FLW will not affect parklands, prime farmlands, wild and scenic rivers, or unique or ecologically critical areas; therefore, effects to these resources were not analyzed in detail.

1.2 LOCATION OF FORT LEONARD WOOD

Fort Leonard Wood is located adjacent to Interstate 44, about 120 miles southwest of St. Louis, Missouri, and 85 miles northeast of Springfield, Missouri (Figure 1-1). The reservation occurs in the Ozark Plateau region. It is located primarily in Pulaski County, with small portions located in Texas and Laclede counties. FLW is bounded by Roubidoux Creek on the west and the Big Piney River on the east. The Rolla-Houston Unit of the USDA Forest Service, Mark Twain National Forest, surrounds FLW on the east, west, and south. Elevations range on the installation range from 750 to 1,309 feet. Waynesville (pop. 3,000) and St. Robert (pop. 1,730) are the communities closest to FLW.

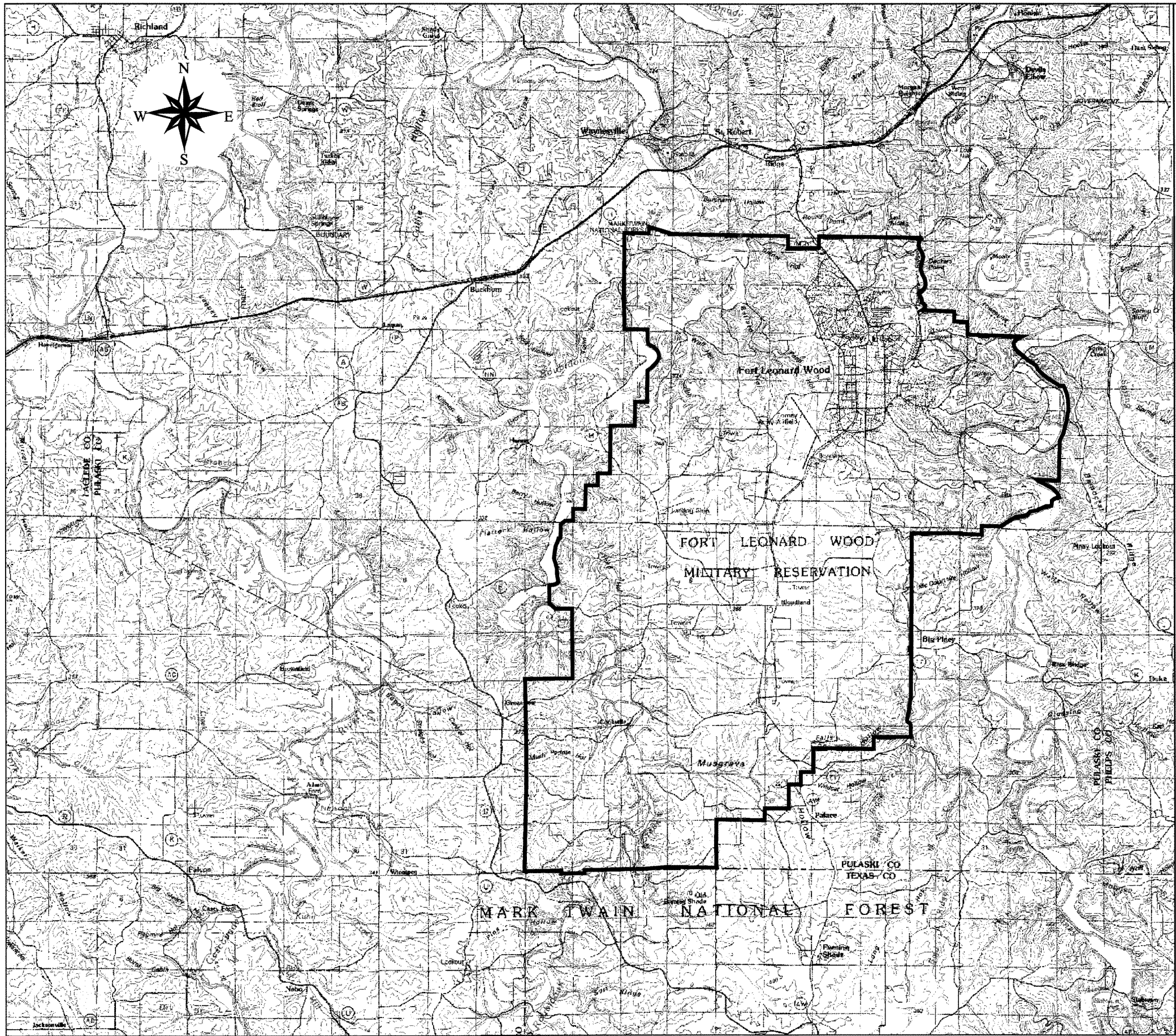


Of the 61,410 acres within the Installation boundary (Figure 1-2), approximately 9,700 acres are administered by the Mark Twain National Forest. The installation is used for basic training and advanced individual training in enlisted and officer engineering, chemical, military police, and transportation specialties. The U.S. Army Maneuver Support Center is located on this land, and together with FLW comprises a U.S. Army Training and Doctrine Command (TRADOC) installation.

1.3 REGULATORY AUTHORITY

This EA has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), as implemented by the President's Council on Environmental Quality (CEQ) regulations. This document is prepared in accordance with Army Regulation (AR) 200-1 - Environmental Protection and Enhancement, and AR 200-2 - Environmental Effects of Army Actions.

The Department of the Army (DA) is the lead agency for this EA. Following final analysis and public comment, Major General A. Aadland, Commander, US Army Maneuver Support Center, is responsible for selecting the alternative to be implemented on FLW.

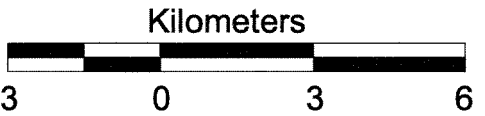


FORT LEONARD WOOD,
MISSOURI

FIGURE 1-2. Location of Fort Leonard
Wood, Missouri.

 Fort Leonard Wood Boundary

Base Map: USGS 30x60 Minute Series (1:100,000
Scale) - Lebanon, MO (reduced)



BHE ENVIRONMENTAL, INC.

Project No. 1012.039

Section 2.0: Purpose and Need

2.1 PURPOSE AND NEED

The need for the proposed privatization of electric utilities at FLW is a function of several factors (U.S. Army TRADOC 1999). In particular, aging systems and the need to comply with environmental laws have combined with declining federal budgets to make their operation and upkeep cost-prohibitive for the Army.

For these reasons, Department of the Army Memorandum DAIM-FDF-U (420-49) of 3 December 1997 (Policy and Procedures for the Privatization of Army Owned Utility Systems at Active Installations – Update) mandates the privatization of army-owned electric utilities, except in cases of unique security issues or where privatization is not economical. The intent of the Proposed Action is to improve base efficiency, enhance utility services and provide an economic opportunity within the private sector.

2.2 PUBLIC SCOPING

The Army determined that it would not solicit the public-at-large for issues, concerns, or opportunities during project scoping. During scoping, input was solicited from Fort Leonard Wood and the U.S. Army Corps of Engineers, Kansas City District.

Section 3.0: Proposed Action

3.1 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is to privatize the ownership and operation of the electric utility systems at FLW. This divestiture involves the sale of all utility infrastructure. The lands above and beneath distribution and collection lines would remain under Army ownership and would be transferred through easement, lease, or permit only.

There are, collectively, 260 miles of electric system utility lines to be privatized at FLW (Table 3-1). Under the Proposed Action, all existing land use management plans, regulations, guidelines, and policies would remain in effect with the transfer of the utility system, its components, and/or lease of associated land. These are designed to mitigate possible adverse effects including those identified in the analysis of Alternative 2, and to maintain current levels, as defined in the Ongoing Mission Master Plan EA (HBA, 1995b) and INRMP (FLW, 2000) of management or protection for all resources.

TABLE 3-1. Inventory of electric utility infrastructure to be privatized at Fort Leonard Wood.

Component	Approximate Quantity
Substations (government portions)	4
Electrical distribution 12.5kV	260 miles (8 miles underground)
Transformers	1380 (50% pole mount, 50% pad mount)
Street lights and poles	3800

Note: Quantities include 10% increase to approximate expansion in electrical systems resulting from BRAC 95 construction.

The affected utilities service the FLW cantonment area and are concentrated there. Electric distribution lines service outlying areas on the installation and extend to the south-central boundary and to within one mile of the west-central boundary. The action area includes all area within installation boundaries where electric utility infrastructure occurs.

The Proposed Action is intended to implement U.S. Army regulations and improve base efficiency. The actual act of privatizing may be a single act or a set of actions depending upon the result of competitive bids and proposals received from utility companies.

3.2 DESCRIPTION OF AFFECTED UTILITIES

The Army proposes to sell the electric distribution system at FLW to a private party or utility company. The lands located beneath over-head lines and above underground lines would remain in the ownership of the federal government, however the private party would gain access to them through lease, permit or easement for the purpose of operation and maintenance of the electric lines.

As currently proposed, a cumulative total of approximately 260 miles of electric distribution lines and four substations would be affected by the proposed privatization (Table 3-1). The federal government would divest an electrical utility system consisting of four substations, approximately 252 circuit-miles of over-head primary distribution line and about eight circuit-miles of underground primary distribution line. All of these facilities are on lands administered by the U.S. Army and none are on lands administered by the Mark Twain

National Forest. The Army would retain ownership and responsibility for electric systems within approximately five feet of structures and within buildings. It would also retain jurisdiction and ownership of the land associated with or underneath these facilities and power lines. Maps 1 and 2 indicate the location of these facilities (Appendix A). A more detailed characterization of the electric utility infrastructure and precise location information is contained in the document titled Environmental Screening Document for Utilities Privatization, Electric Distribution System at Fort Leonard Wood, Missouri (BHE 2000).

Section 4.0: Description of the Alternatives

4.1 DEVELOPMENT OF THE ALTERNATIVES

The National Environmental Policy Act and Army Regulation 200-2 require that Environmental Assessments identify and disclose environmental effects of feasible action alternatives. A Programmatic Environmental Assessment (PEA) was prepared in support of utilities privatization at 17 installations nationwide, including FLW (U.S. Army TRADOC 1999). The PEA identified the potential need for encumbrances to protect sensitive resources and to maintain their current level of protection, when transferring utility systems both with and without associated lands.

The scope of the EA to address utilities privatization at FLW, and therefore the alternatives it addresses, have changed since the initial decision regarding privatization of utilities at FLW. At one time (1998), FLW proposed privatization of three utilities: wastewater, potable water, and electricity. Natural gas utilities at FLW were successfully privatized in 1992 (Johnson, pers. comm.; PEI, 1991).

At a coordination meeting 10 November 1998 three basic alternatives for the privatization of these three utilities were proposed and agreed to (BHE 1998). These were a No Action Alternative, a "partial transfer" alternative with no lands, and a "partial transfer" with lands.

Each of the action alternatives was designed to address effects of privatization with and without encumbrances, for a total of five alternatives or components for analysis.

Following publication of the final TRADOC PEA, issues involved with the Proposed Action and the alternatives proposed for analysis were reviewed. Preliminary issues focused upon protection of sensitive resources after utility privatization. As determined in the PEA, encumbrances may be used to preclude adverse environmental effects from utility transfer both with and without land (U.S. Army TRADOC 1999). It was, therefore, considered redundant and unnecessary to separately evaluate effects of transferring utilities with and without lands because all effects can be addressed through the use of deed restrictions or encumbrances. Instead it was determined that alternatives would focus upon the potential effects of transferring the utilities with and without encumbrances. In this manner, specific encumbrances would be developed as needed to address potential adverse effects identified for resources at FLW.

During the NEPA process and Section 106 (National Historic Preservation Act) compliance activities, concerns for protection of culturally-significant resources arose (pers. comm., Blackwell). In consideration of these concerns, in 2001, FLW elected to proceed with privatization of the electric utility (which raises no potentially significant environmental concerns) while it determines an appropriate course of action regarding privatization of potable and wastewater utilities. This decision does not constitute segmentation as defined by NEPA, and is in full compliance with NEPA guidance, AR-200-1, and AR 200-2.

By redefining the proposed action as the privatization of the electric utilities at FLW, the previously defined alternatives became infeasible, as no land is proposed for transfer with the utility infrastructure. Because lands associated with the transfer of the electric utilities will remain under Army ownership, encumbrances associated with the transfer of land ownership no longer apply. To proceed with the NEPA analysis and documentation of the proposed utility privatization, the alternatives considered as feasible were then defined as the No Action Alternative (continued implementation of the Ongoing Mission Master Plan) and the Proposed Action to privatize the electric utilities at FLW.

4.2 DESCRIPTION OF THE ALTERNATIVES

4.2.1 Alternative 1 – Do not Privatize (No Action)

Under the No Action Alternative, the electric utilities presently under federal ownership and operation at FLW would remain so, and Army mission operations in the action area would continue as currently executed, where currently located, and as defined in the Ongoing Mission Master Plan EA (HBA 1995a).

Operation of the electric facilities includes maintenance, repair and minor improvements as needed. Maintenance of right-of-way vegetation involves selective tree-cutting and mowing, but does not currently include herbicide use. Repairs and replacements would be made as needed, and installation of any new distribution lines or facilities would undergo evaluation for any possible environmental effects.

4.2.2 Alternative 2 – Privatize Electric Utilities (Proposed Action)

The U.S. Army would privatize ownership and operation of electric distribution systems at FLW. This action would involve the sale of four substations and over 250 miles of electric lines. Access to distribution lines would be granted through lease, permit or right-of-way agreements (easements). Land beneath or above distribution lines would remain in federal ownership and access would be granted through permit, lease, or easement. FLW would continue to comply with all applicable Federal, state, county and municipal laws, ordinances and regulations associated with this land use.

Operation of the privatized utilities would include the same activities described under the No Action Alternative. Maintenance, repair and minor improvements are foreseeable. These activities typically entail vehicles to access specific portions of the line and small machinery to dig access to underground lines or access over-head lines. Vegetation in rights-of-way would be maintained using mechanical means. Construction of new distribution lines, expansion of existing lines, and/or major maintenance or repair activities are outside the scope of this EA. No other infrastructure improvements related to privatization of electric utilities are proposed under this scope.

Because FLW is currently committed to restrictions from existing regulatory permits and other compliance requirements and environmental management policies, any

feasible alternative that includes privatization of electric utilities will incorporate features that restrict land management and the way in which development projects may be implemented. Many of the features pertinent to this EA are described in the Ongoing Mission Master Plan (HBA 1995a). Other project design features ensure compatibility with FLW environmental compliance standards as defined in FLW's regulatory restrictions and management policies (HBA 1995a, HBA 1997). The proposed action will be in compliance with the FLW Master Plan (HBA 1995a) and zoning, which will later be revised to reflect the privatization action.

New owners of the electric utilities will be required by their easement, lease, or permit agreement to comply with all applicable Federal, State, and local laws, regulations, and standards. While there are no known archeological resources within the project area, the MOA established among FLW, the ACHP, SHPO, and other appropriate parties will also stipulate provisions applying to any archeological resources incidentally discovered in association with the Proposed Action. All lessees and sub-lessees will be responsible for obtaining and complying with any environmental permits required for operation, and shall not adversely impact the environmental program, environmental cleanup, human health, or the environment at FLW (C. Stenger, pers. comm.). To ensure compliance with environmental regulations, FLW will maintain the authority to inspect the utility and enforce tenant environmental compliance.

Section 5.0: Affected Environment

This section describes existing environmental conditions within the project action area to establish baseline conditions against which to evaluate environmental effects of action alternatives. Detailed descriptions of installation-wide environmental conditions are provided in the EA for the Ongoing Mission (HBA 1995a), the EIS for BRAC (HBA 1997), and the Environmental Screening Document for the proposed action (BHE 2000), and are hereby incorporated by reference. This section focuses upon the existing environment within the action area for the proposed privatization of electric utilities.

5.1 SETTING AND FACILITIES

Electric utilities service developed areas on FLW, with electric utility infrastructure occurring over much of the Installation. Therefore, the action area for the proposed project includes the 61410-acre area within the Installation boundaries. About 15 percent (approximately 9,200 acres) of the installation is devoted to a cantonment, or urbanized area, to support the troops living and working at FLW. It is located in the northeastern portion of FLW, and is surrounded by training areas and open space. Within the Cantonment Area, land is dedicated to a variety of uses, including troop and family housing, administrative offices, schools, a hospital, recreation facilities, utilities, commercial services, industrial facilities and warehouses, and training grounds. The non-cantonment area, which occupies the

remaining 52,200 acres of installation lands, provides space for training areas, ranges, and impact areas, bivouac and maneuver areas, recreation, and a closed sanitary landfill (HBA 1997). Installation grounds are accessible via numerous paved roads and parking lots, as well as a railroad complex located near the eastern limit of the cantonment area. The action proposed in this EA would affect the Cantonment and non-cantonment areas.

5.2 ECOLOGY

5.2.1 Geology

Fort Leonard Wood is located in the Springfield-Salem Plateau section of the Ozark Plateau which is largely rolling, stream eroded hills overlooking narrow stream valleys. Bedrock in the FLW area consists of dolomite, sandstone, shale, and chert (Proffitt 1993). This geology manifests in a karst landform characterized by sinkholes, caves, springs, and underground streams.

5.2.2 Soils

Soils at FLW consist primarily of residual material formed on interbedded dolomite and sandstone (HBA 1995a). A limited area of young alluvial deposits of sand, silt, gravel, and clay are located along the floodplains of the Big Piney River and Roubidoux Creek. The four most common soil associations found on FLW are: Nolin-Huntington-Kickapoo series, Clarksville-Gepp series, Viration-Clarksville-Doniphan series, and the Lebanon-Plato series.

Most soils found within the cantonment area are Viration-Clarksville-Doniphan series soils, which are suitable for sanitary facilities and building site development (HBA 1995a). Erosion is one of the main management concerns for soils of this association. Approximately 85 percent of the action area is located in an area of soils with high erodibility values (HBA 1995a).

Soil/land management in the cantonment area is comprised of limited landscaping with drought tolerant and native species, mowing, irrigation of a very limited area, weed control, and fertilizing (FLW 2000). Soil erosion is managed in the cantonment area by maintaining either cover by pavement or by vegetation. The FLW INRMP (FLW 2000) provides for

the maintenance of vegetative cover, as well as roads, in the cantonment area.

Vehicle access to power and other utility lines is predominantly via open public road, however some access is without the benefit of roads (J. Johnson, pers. comm.). In general practice, to prevent soil erosion caused by roads and cross-country traffic, soil and water conservation structures are placed in and near roads and streams. However, at FLW, few (if any) of these structures are needed because the area is heavily vegetated.

5.2.3 Rivers and Wetlands

Major surface water features at FLW are the Big Piney River located on the east side of the installation, Roubidoux Creek on the west and Dry Creek on the north. The Big Piney River maintains a permanent flow even during drought periods and is the principal source of potable water on the installation (U.S. Army COE 1997). The Big Piney River and Roubidoux Creek are clear, swift-flowing streams with large pools and rocky or gravelly beds. Nineteen lakes and impoundments, covering a total of approximately 100 acres, are located on FLW.

A formal wetlands inventory was recently prepared for FLW (HBA 1995a). Although only 75-85% of the installation was surveyed, over 1,550 acres of wetlands were identified. The floodplains of Roubidoux Creek and Big Piney River accounted for almost 90% of the wetlands found. In addition to these, several springs, shallow marshes, shrub swamp and wet meadows were delineated. Large (stationary) bodies of water on the installation are man-made and include Bloodland Lake and Penn's Pond (Proffitt 1993).

Jurisdictional wetlands are administered by the U.S. Army Corps of Engineers under the Clean Water Act (CWA). Section 401 of the CWA prohibits point source pollution into waters without a permit and Section 404 prohibits filling of any wetland of the United States.

5.2.4 Groundwater

Groundwater is available from several aquifers underlying FLW (HBA 1997). Karst topography (e.g., sinkholes, springs, and underground springs) influences the flow of groundwater on the installation. Groundwater flow on FLW has been

documented in previous studies (Black and Veatch 1978, MDNR 1982). Most sinkholes on FLW are found within or near the cantonment area (HBA 1997), although no sinkholes, springs, or other specific karst features are known to occur where electric utility infrastructure is in contact with the ground.

In most uplands, the depth to the water table is relatively deep. The U.S. Geological Survey reports that depth to groundwater in shallow monitoring wells located on the ridge tops in this area commonly exceeds 100 feet below the land surface (HBA 1997). Water well logs from the MDNR's Sample Well-Log Library for potable wells located on the installation indicate that production wells on the installation are typically drilled to depths between 700 and 900 feet below the ground surface, typically 650 to 850 feet into the dominantly dolomite bedrock. Groundwater yields, when they were recorded, ranged between 150 and 180 gallons per minute.

5.2.5 Flora and Fauna

An estimated 72 percent of FLW is covered with deciduous forest with an additional 6 percent in pine plantations (FLW 2000). Dominant habitat types found on FLW include upland forest, bottomland forest, savanna, prairie, glade, marsh, and swamp. Scattered throughout FLW there are also prairie openings, and abandoned farm fields, most of which are reverting to forest cover (Proffitt 1993). The MDC has identified several unique habitats (i.e., glades, caves, aquatic communities) on FLW that are ranked as significant and exceptional, indicating the need for protection and management (HBA 1997).

Floral surveys indicate over 600 plant species, including six species listed as sensitive by the MDC, occur on the installation (HBA 1997). In the uplands of FLW, forests are dominated by hardwoods, especially oak (*Quercus spp.*) and some pines (*Pinus spp.*). At least five species of oak occur in the area along with black hickory (*Carya texana*), mockernut (*C. tomentosa*) and dogwood (*Cornus florida*). The lowlands on FLW consist of rivers, creeks, and alluvial floodplains. These areas are characterized by a variety of trees such as sycamore (*Plantanus occidentalis*), river birch (*Betula nigra*), American elm (*Ulmus americana*), slippery elm (*U. rubra*), walnut (*Juglans nigra*), and green and white ash (*Fraxinus pennsylvanica* and *F. americana* respectively). Open areas at FLW are formerly cleared areas or old fields, and contain various grasses, shrubs, and "successional"

tree species, e.g., red cedar (*Juniperus virginiana*), sassafras (*Sassafras albidum*), American and slippery elm (Proffitt 1993).

Within the cantonment area, most native vegetation has been removed. Some landscaped areas include native tree species such as post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), black hickory (*Carya texana*), dogwood (*Cornus* spp.), and eastern red cedar (*Juniperus virginiana*). Tall fescue and Kentucky bluegrass are the most common grasses (FLW 2000). With the exception of small patches of remaining upland deciduous forest, the cantonment area consists primarily of landscaped grounds containing ornamental grasses, shrubs, and trees.

The habitat on FLW supports a wide variety of fish and wildlife. Numerous species of common wildlife, including terrestrial mammals, bats, amphibians, birds, and invertebrates are found throughout the installation. The juxtaposition of several habitat types (forests, open grasslands, bluffs, and wetlands) on FLW results in a diverse faunal component. Numerous reptile, rodent, bat, and bird species at FLW benefit from these conditions (Proffitt 1993). Many aquatic species (e.g., fish, invertebrates) are found in FLW streams, lakes, and ponds. A detailed inventory of plants, birds, and mammals was conducted on FLW between 1989 and 1993 and species lists are available (Proffitt 1993; FLW 2000). A comprehensive inventory of terrestrial, and aquatic wildlife is provided in the BRAC EIS (HBA 1997) and the FLW INRMP (FLW 2000). The Fort Leonard Wood cantonment area (including the proposed project area) is highly urbanized and offers limited suitable habitat for wildlife (BHE 1999).

5.2.6 Threatened and Endangered Species

Three federally-listed species occur on FLW: the gray bat (*Myotis grisescens*, federally endangered), the Indiana bat (*Myotis sodalis*, federally endangered), and the bald eagle (*Haliaeetus leucocephalus*, federally threatened). Protection for federally listed threatened and endangered (T&E) species is provided by the Endangered Species Act (ESA) of 1973, as amended. The implementing regulations (50 CFR 400) require federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) if a Proposed Action may affect a listed species or its habitat. Furthermore, the ESA prohibits federal actions that would jeopardize the continued existence of any listed species. No federally-designated

species proposed for listing are present on FLW. Except for the three federally listed species noted above, no species listed by the MDC as rare, threatened, or endangered are found on FLW (R. Ziehmer, pers. com.).

Detailed information regarding gray bats, Indiana bats, and bald eagles on FLW is provided in the Biological Opinion (BO; USFWS 1996) and Biological Assessment (BA) of the Master Plan and Ongoing Mission (3D/E 1996); BO (USFWS 1997) and BA for the Relocation of the U.S. Army Chemical and Military Police Schools (BRAC) to FLW (3D/E 1997).

FLW's Endangered Species Management Plan (ESMP, BHE 1999) addresses conservation and recovery needs of the three federally-listed species known to occur there. Conservation guidelines have been in place since 1992 (T. Glueck, pers. comm.), which used special management areas to preclude potential threats to Indiana and gray bats. Special management areas are centered around caves of known importance. Portions of the ESMP that apply to the protection of bald eagles and their habitat focus upon maintaining habitat quality at eagle winter roosts and upon maintaining habitat quality in streams important in producing prey for bald eagles on FLW.

5.2.6.1 Gray bat

The gray bat was listed as endangered in 1976. No designated critical habitat for this species occurs on FLW. Gray bats are known to utilize habitat along Roubidoux Creek as well as other areas on FLW (BHE 1999). Gray bats roost in caves on FLW during spring, summer, and autumn (BHE 1999). Caves on FLW are used as maternity sites, however a small number of gray bats have been found hibernating near Indiana bats in Freeman Cave (A. Schmidt, pers. comm.). The population of gray bats in Missouri is reportedly stable or increasing (BHE 1999).

5.2.6.2 Indiana Bat

The Indiana bat was listed as endangered in 1967 under the Wildlife Conservation Act and later under the Endangered Species Act. There is no critical habitat for this species on FLW. The range-wide population of the species is reportedly declining, with the majority of losses in Missouri (BHE 1999). The Indiana bat may occur on FLW year-round. During the summer months, this species roosts in trees and forages over a wide area (3D/E 1996). At least four caves on FLW support declining numbers of hibernating Indiana bats during winter months.

5.2.6.3 Bald Eagle

The bald eagle was listed as endangered in 1978. Population increases prompted downlisting to threatened in 1995. No critical habitat for this species occurs on FLW (BHE 1999). Bald eagles are known to winter on FLW along Big Piney River and Roubidoux Creek. A single bald eagle nest was discovered in February 2001, along the Big Piney River, within a half-mile of the East Gate Bridge. Other than this nest, the nearest known bald eagle nest is approximately 2.5 miles from the installation (T. Glueck, pers. comm.). More detailed information is provided in the BO (USFWS 1996) and BA of the Master Plan and Ongoing Mission (HBA 1996a) and the BO (USFWS 1997) and BA for the BRAC action at FLW (HBA 1996b).

5.2.6.4 T&E Species Management at FLW

An *Endangered Species Management Plan* (ESMP) was prepared for FLW to address conservation and recovery needs of the three federally-listed species known to occur there (BHE 1999). Conservation guidelines have been in place at least since 1997 (USFWS 1997) using special management areas to preclude potential threats to the Indiana and gray bats. Threats to be mitigated by the plan focused upon disturbances to caves used as hibernacula, exposure to unsafe concentrations of chemicals, and loss of summer foraging and roosting habitat.

Special management areas are centered around caves of known importance. Within these

special management areas, three bat management zones (BMZ) are designated as concentric circles surrounding the caves. Within the 20-acre Restricted Zone closest to the caves, disturbance is prohibited during times of bat use. Outside of this zone, BMZ1 is intended to restrict human activity in order to insure bats are not disturbed during entrance to and exit from the cave. BMZ2 is identified in order to limit activities that might cause loss of forest canopy.

Portions of the ESMP that apply to the protection of bald eagles and their habitat focus upon maintaining habitat quality at winter roosts and that of their aquatic prey. For example, proposed management guidelines include the prohibition of in-stream gravel operations except as needed for routine culverts and road crossings. It also indicates a need to restrict human activity within eagle concentration areas during periods of winter occupation.

5.3 HUMAN HEALTH & SAFETY

To identify potential threats to human health and environment associated with the Proposed Action from hazardous substances, an Environmental Screening Document (ESD) was produced. An ESD identifies any storage, release, or disposal of hazardous substances on the affected properties or adjoining parcels. This screening was done in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and regulations contained in 40 CFR 373.3 which require that hazardous substance activity be reported to the purchaser when transferring federally-owned property.

Fort Leonard Wood currently purchases wholesale electrical power at several delivery points from a single supplier, Sho-Me Power Electric Cooperative. FLW owns and operates the electrical utility system that consists of four substations, approximately 260 miles of overhead primary distribution line and about eight circuit-miles of underground primary distribution line. The electric line infrastructure was surveyed during development of the ESD for the presence of hazardous materials (BHE 2000; BHE 2000). According to Stenger (pers. comm.), the electric lines are co-located with lead-shielded telephone lines in some locations on the installation. These have no known effect to the environment, and plans exist for removing the material as funding allows. Regardless of privatization, the DOA assumes responsibility for removing these lead-based materials.

Similarly, the ESD for the electric utilities on FLW identified the potential for polychlorinated biphenyls (PCB) transformers to exist on some electric distribution poles (BHE 2000). FLW sampled transformers throughout the installation for the presence of PCBs. The installation believes that PCB-containing transformers have been replaced or refilled with non-PCB dielectric fluid. However, FLW continues to test transformers for PCB content as they are removed from service. Although none were found during the screening process, some may be found at a later date. If found, this material will be remediated and disposed of by, and at the expense of, FLW, in accordance with all federal and state requirements. Therefore regardless of privatization, the installation assumes all responsibilities for PCB-contaminated materials that may be found. Remediation is the responsibility of the installation and will have no bearing on private parties that may purchase or lease the utilities.

5.4 SOCIO-ECONOMICS

Fort Leonard Wood's daytime population is approximately 24,400 (FLW Public Affairs Office, July 2001). This population exceeds that of any of the surrounding communities in Pulaski and adjacent counties. As such, FLW is a major generator of economic activity within the surrounding nine-county region of influence (HBA 1995b). The local communities of St. Robert and Waynesville are closely linked to activity on the installation because they satisfy a large part of the demand for off-post commercial services and housing.

Almost 60 percent of the total employment in Pulaski County is government related, the majority of which is associated with FLW. In 1993, military personnel accounted for over 10 percent of the jobs in the nine-county region of influence and 40 percent of the jobs in Pulaski County (HBA 1995b). Pulaski County has the second highest median household income in a nine-county region surrounding and including FLW (HBA 1997).

The electric utilities at FLW are presently owned by the federal government and are in part operated under contract to private utility contractors. Two private entities operate and maintain the electric utility system at FLW; RUST Constructors, Inc., and Vina Construction Company, Inc. Civil service employees administer the contracting program and plan for its overall needs.

5.5 CULTURAL RESOURCES

The National Historic Preservation Act (NHPA; sections 106 and 110), the Archeological Resources Protection Act (ARPA), 36 CFR 79, and Army Regulation AR-420-20 mandate consideration of cultural resources prior to all federal activities. Furthermore, FLW entered into a Memorandum of Agreement with the Missouri State Historic Preservation Officer (SHPO) in 1986, committing to consideration of historic properties that may be eligible for the National Register of Historic Places (NRHP).

The prehistory and history of the Ozark Highland Region, which includes FLW, covers the presence of human occupants for over 14,000 years (HBA 1992). The archeological record at FLW begins approximately 10,000 years ago, although evidence from other areas of the Ozark Highlands suggests humans occupied the region approximately 13,000 years ago (Ahler et al., 2000). Of particular significance to the history of FLW is the operation of a German prisoner-of-war (POW) camp during World War II. The legacy of POW incarceration includes construction projects, in particular stonework such as retaining walls, drainage structures and sidewalks. Burt et al. (1998) demonstrated that the concentration of German POW stonework at FLW is unique, not only in the state of Missouri but within the United States. The stonework is the only remaining tangible reminder of the POW era at FLW, and the complement of stonework at FLW is more extensive and more complete than at any other military installation in the nation.

As part of FLW's effort to comply with federal regulations regarding historic preservation, the installation designed and initiated a long-term interdisciplinary program that integrates environmental, geomorphic, and archaeological research. Since 1992, the FLW Cultural Resource Management Program, in cooperation with the U.S. Army Civil Engineering Research Laboratory (USACERL) and the U.S. Army Corps of Engineers Waterways Experiment Station (WES), has initiated compliance and data recovery projects designed to survey the entire installation and to recover data from a sample of archaeological sites. As of October 2000, this program recorded 542 archaeological sites, 230 (42%) of which are eligible or potentially eligible for listing on the NRHP. FLW projects that the entire installation will have been surveyed by FY 2005 (Edging and Lohraff 2000).

Edging and Lohraff (2000) defined five cultural resource zones for FLW. The majority of prehistoric sites on FLW are found in the large river bottoms, adjacent bluffs, and a 500-meter zone in the uplands adjacent to Roubidoux Creek and Big Piney River. Utilities to be privatized are not located in these areas, and no known sites are associated with the utilities.

A study of the architectural resources at FLW was conducted in 1992, and again in 2000. The Draft Integrated Cultural Resources Management Plan identifies the location and significance of National Register-eligible buildings on FLW (Whalley in prep.). No historic structures are proposed for transfer to private ownership under the Proposed Action. Electric distribution lines do occur in the vicinity of German POW-built structures, running either overhead or buried beneath stonework structures.

Section 6.0: Environmental Consequences

6.1 ANALYSIS OF THE ALTERNATIVES

The effects of ongoing operation and maintenance of the electric utilities at FLW were evaluated in the *Final Environmental Assessment for the Master Plan and Ongoing Mission* (HBA 1995b). That analysis served as the basis for evaluating Alternative 1, the No Action Alternative, in this EA, and for describing baseline environmental conditions. Each alternative was evaluated for direct, indirect and cumulative effects to each resource area. Table 6-1 lists evaluation criteria used for each of the key resources analyzed.

TABLE 6-1. Evaluation criteria used to compare alternatives for effects to key resources.

Key Resources	Evaluation Criteria
Wetlands and Rivers	A. Future Actions
Threatened & Endangered Species	B. Noise and Human Disturbance
	C. Habitat Modification
Human Health & Safety	D. Hazardous Materials
Socio-Economics	E. Quantity and Quality of Jobs
	F. Quality of Public Service
Cultural Resources	G. Historic Properties

6.2 ALTERNATIVE 1 - NO ACTION

Under the No Action Alternative, the electric utilities on FLW would remain in federal ownership and operation. Environmental effects of ongoing operation of the utilities at FLW are addressed in detail in *the Final Environmental Assessment for the Master Plan and Ongoing Mission* (HBA 1995b). The following summarizes and elaborates upon that material as it relates to this EA.

6.2.1 Ecology

6.2.1.1 Soils

The No Action Alternative stipulates that the current program of control and repair of damaged soils continues in the proposed action area. The FLW INRMP provides for the maintenance of vegetative cover and roads in the cantonment area (FLW 2000), which

minimizes soil erosion. Repair of underground electric lines may have a short term negative effect on soils within the action area, as soils may erode when exposed to weather elements (wind, precipitation) and mechanical disturbance. These effects, however, are very minor, readily correctable, and short-term.

6.2.1.2 Wetlands and Rivers

Evaluation Criteria A: Distribution lines and utility structures were evaluated relative to delineated wetlands on FLW (HBA 1995a). Wetlands coincide or come very close to either below ground or overhead lines. Current operations and associated activities are known to have minor effects to vegetation if and when digging or minor construction is needed, however this is typically short-term and temporary. No damming or modification of flow is anticipated from the repair or replacement of underground lines that may coincide with, or be adjacent to, wetlands. However, digging activities in wetlands must comply with Section 401 and 404 of the CWA and permits are obtained as needed.

In summary, under the No Action Alternative there would be no change from the present. Present operations in support of electric utilities at FLW are having no adverse effect to waters of the U.S., based upon data presented in the Ongoing Mission EA (HBA 1995b) and the fact that future activities in wetlands and rivers would be conducted only with federal authorization, with permitting and concomitant mitigation as required. Proposed activities that may affect wetlands or rivers would be considered a separate action, to the proposed utilities privatization, and outside the scope of this EA.

6.2.1.3 T&E Species

The proximity of the electric utility infrastructure was assessed in relation to the geographic locations of known bat use areas and bald eagle concentration areas. Electric power lines occur within BMZ2 of Freeman, Brooks and Wolf Den Cave Management Areas. In addition, over-head electric distribution lines are located along the entire northern edge of the Big Piney River, which provides habitat frequented by bald eagles (BHE 1999).

Evaluation Criteria B: Potential effects of operation and maintenance of utilities at FLW were evaluated in the EA for the Ongoing Mission (HBA 1995b), Environmental Impact

Statement for the Relocation of the U.S. Army Chemical and Military Police Schools (HBA 1997), BO for the Ongoing Mission (USFWS 1996) and the BO for BRAC (USFWS 1997). Noise-generating activities such as mowing and repair or replacement machinery that could potentially disturb bats are not close enough to any of the cave management areas to be of concern. This is based upon conclusions made in the Ongoing Mission EA, Ongoing Mission BO, BRAC EIS, BRAC BO, and the *Endangered Species Management Plan* (ESMP) for FLW, which indicate a 1000 lb. charge can be detonated at a range of 300 meters from the cave without risk of disturbing bats in hibernation or maternity habitat (BHE 1999). All of the activities associated with the electric utilities are outside of this zone.

Effects of human activity on bald eagles from utility operations was assessed in the BA for the Ongoing Mission (HBA 1996a) and determined to have no adverse effect to bald eagles (USFWS 1997). Nevertheless the ESMP (BHE 1999) included a management goal to restrict human activities in eagle concentration areas during winter occupation periods.

Evaluation Criteria C: The maintenance of power line corridors involves management and removal of vegetation. In some cases, these lines traverse forested areas and in others they traverse open areas. Trees, especially hazard trees, may need to be removed periodically, and herbaceous vegetation may need to be mowed or removed. These activities facilitate access to the lines and prevent trees from falling on the lines during severe storms. In addition, digging and vehicular access to lines adjacent to or within riparian corridors can temporarily affect localized water quality if sediment is disturbed.

Utility operations and maintenance were addressed in the EA for the Ongoing Mission (HBA 1995b) and determined to have no adverse effect to bald eagles, gray bats and Indiana bats (USFWS 1997). This was based upon an understanding that habitat modifying activities would be confined to existing corridors and conform to guidance established in the ESMP for FLW. Current guidance from the U.S. Fish and Wildlife Service (pers. com., R. Hansen) recommends that tree removal occur within the period of 15 November through 15 April, and be prohibited within BMZs without FLW approval. In practice, the ESMP has been updated to incorporate this recent guidance (T. Glueck, pers. comm.). The ESMP also suggests that in-stream operations affecting gravel and sediment could adversely affect bald eagle prey habitat and therefore should be prohibited to the extent possible.

Under present management, all ongoing as well as future operations, maintenance and improvements are subject to review for consistency with the FLW ESMP and for compliance with the Endangered Species Act (ESA). Should any planned actions have the potential to affect threatened or endangered species at FLW, these would be so mitigated.

Based upon analyses prepared in support of the FLW ongoing mission, it appears that the current operation and maintenance of the utilities at FLW are having no adverse effect on T&E species. Therefore, the No Action Alternative will have no adverse effect upon T&E species because no change from the current status would result. This is in consideration of the location of utilities, and the assumption that maintenance and repair involve no herbicide use and are consistent with the ESMP for FLW. Guidance in the ESMP establishes conservation guidelines that restrict activities in bat and bald eagle management zones should any improvements, repairs, or maintenance be needed. It also assumes that any future actions will comply with the ESA.

6.2.2 Health & Safety

Evaluation Criteria D: An accidental spill of hazardous substances could contaminate water, soil or the air and adversely affect humans and wildlife in the area. FLW has a Spill Prevention & Response (SPCC) Plan that meets regulatory compliance with the Clean Water Act (CWA) and the Resource Conservation and Recovery Act (HBA 1995b). This addresses potential soil and water contamination from all sources on the installation.

Under the No Action Alternative, there would be no change in ownership or operation of the electric facilities at FLW, and the present SPCC Plan would remain in effect. This minimizes the likelihood of an accidental spill and therefore minimizes the potential for indirect effects to the environment (HBA 1995b).

6.2.3 Socio-Economics

Evaluation Criteria E: FLW has a strong positive influence on the economy of outlying areas, especially St. Robert and Waynesville in Pulaski County. Should FLW not privatize electric utilities, the number of people employed in support of electric utilities at FLW would remain the same as at present. Thus, the No Action Alternative would result in no change to the socio-economic relationships of FLW with regard to the electric utility.

Evaluation Criteria F: Under the No Action Alternative, the quality of public service effected by continued operation and maintenance of the Government-owned electric utility system is expected to continue to decline over time. This trend reflects the long-term challenge to Department of Defense (DoD) to provide adequate capital investment funds for maintenance of the electric infrastructure. In result, the infrastructure is characterized by aging equipment, a growing backlog of maintenance and repair needs, infrastructure elements that remain in service beyond a normal life-cycle, and steadily declining operations budgets. These problems have a direct, apparent, and worsening effect upon the quality of electric service delivery to FLW military and non-military consumers. This trend is expected to continue, and is a principal reason the DoD directed privatization of all utility systems worldwide.

6.2.4 Cultural Resources

Evaluation Criteria G: All ongoing actions in support of the electric utilities at FLW are in compliance with the NHPA, ARPA, and the Native American Grave Protection and Repatriation Act (NAGPRA). Under the No Action Alternative, foreseeable ongoing and future activities would continue to comply with these laws. Therefore no adverse effects would be expected to result from Alternative 1.

6.2.5 Cumulative Effects of Alternative 1

Cumulative effects result from direct and indirect past, current, and reasonable foreseeable future actions that are individually minor but may be collectively significant. Past activities on FLW include land use by prehistoric and historic Native Americans, settlement of the area by

European immigrants, and development and operation of the area as a military training facility. Effects of past actions and land uses have resulted in the existing condition of FLW as described in Section 4.0 of this document. The ongoing activities in support of the electric utilities at FLW were evaluated in the Ongoing Mission EA (HBA 1995b) and found to produce no significant adverse effects upon the environment.

FLW is currently considering a plan to improve the access road at the West Gate to the Installation, however, it will not have a significant effect upon existing conditions in the project area (HBA 2001). In addition, FLW plans to construct a Technology Research Park and Army Installation Operations Complex (BHE 2001), which also will have no significant effect upon existing conditions. Currently, there are other Army actions undergoing separate evaluation under NEPA; however alternatives for those actions have not been selected, therefore details are unknown and cannot be assumed at this time. No future actions, other than those analyzed here, are reasonably foreseeable within the area of analysis.

Under Alternative 1, there would be no significant effects to environmental resources. Soils, and the quality of public utility service, may be directly and negatively affected by Alternative 1, the No Action Alternative. These effects are minor, and are described in Sections 6.2.1.1 and Section 6.2.3, respectively.

6.3 ALTERNATIVE 2 – PRIVATIZE ELECTRIC UTILITIES (PROPOSED ACTION)

Under the Proposed Action, infrastructure associated with the electric utilities at FLW (Table 3-1) would be sold to a private entity or entities. Land associated with this infrastructure will not be sold. Access to the electric utilities will be granted via easement, lease, or permit.

6.3.1 Ecology

6.3.1.1 Soils

Repair of underground electric lines may have a short term negative effect on soils within the action area, as soils may erode when exposed to weather elements (wind, precipitation) and mechanical disturbance. These effects, however, would be very minor, readily correctable, and short-term. The area of exposed soil would be small (large enough only to allow

access to the lines) and the exposure would be temporary.

The FLW INRMP (FLW 2000), which would remain in place under Alternative 2, mandates measures to minimize soil erosion. In addition, Best Management Practices for land disturbance are provided in the Missouri Code of State Regulations (10 CSR 20-6). These features make it unlikely that the Proposed Action will have long-term or significant adverse effects on soils.

6.3.1.2 Wetlands and Rivers

Evaluation Criteria A: Current utility operations and associated activities are known to have minor direct or indirect effects to vegetation if and when digging, repair, maintenance or construction is needed. These effects are considered to be short-term and temporary. No damming or modification of water flow is anticipated from the repair or replacement of underground lines that may coincide with, or be adjacent to, wetlands. Nevertheless, the federal government will continue to be bound by the requirements of the CWA in regard to any activities that affect waters of the U.S. This permit process insures that no adverse effects will occur to rivers and wetlands at FLW. Therefore no change from present is anticipated as a result of implementing Alternative 2.

6.3.1.3 T&E Species

None of the properties to be transferred have unique or important habitat qualities for bats or bald eagles. Therefore a change in ownership and operation of electric utilities will have no direct effect on these species or their habitats.

The geographic location of utility lines and facilities to be privatized was assessed relative to important habitat used by federally listed species. Both underground and over-head utility lines coincide with, or come very close to habitat used by these sensitive resources. Noise disturbances and habitat modifications are expected to occur from repairing or replacing distribution lines and maintaining facilities and access to them. Therefore indirect effects are possible.

Evaluation Criteria B: Noise-generating activities such as mowing and repair or

replacement machinery that could potentially disturb bats are not close enough to any of the cave management areas to be of concern. This is based upon conclusions made in the Ongoing Mission EA, Ongoing Mission BO, BRAC EIS, BRAC BO, and the *Endangered Species Management Plan* (ESMP) for FLW, which indicate a 1000 lb. charge can be detonated at a range of 300 meters from the cave without risk of disturbing bats in hibernation or maternity habitat (BHE 1999). All of the activities associated with electric utilities are outside of this zone. Furthermore, while operation and maintenance activities may generate noise disturbances similar in spectral energy distribution, they would be of lesser intensity than such a detonation. Under Alternative 2, no change from present is anticipated in noise disturbances within BMZs.

Effects to bald eagles from excessive human activity during noise-generating activities such as mowing and repair or replacement machinery would manifest as a temporary flushing response which would not affect breeding behavior, reproductive success or survival. For these reasons, the impact is not biologically meaningful and the anticipated effect is not considered to be significant. Therefore, no adverse effect would result from noise disturbance to bald eagles upon privatizing the operation and maintenance of the electric utilities at FLW.

Evaluation Criteria C: The maintenance of power line corridors involves the periodic management and removal of vegetation. Trees, especially hazard trees, may need to be removed and herbaceous vegetation may need to be mowed or removed. These activities facilitate access to the lines and prevent trees from falling on the lines during severe storms. In addition, digging and vehicular access to lines adjacent to, or within, the riparian corridor can temporarily affect localized water quality if sediment is disturbed.

Ongoing utility operations and maintenance were addressed in the EA for the Ongoing Mission (HBA 1995b) and determined to have no adverse effect to bald eagles, gray bats and Indiana bats (USFWS 1997). This was based upon the understanding that habitat modifying activities would be confined to existing corridors and conform to guidance established in the ESMP for FLW. Specifically, current ESMP guidance, as practiced, indicates that any necessary tree removal occur within the period of 15 November through 15 April and be prohibited within BMZs without FLW approval. The ESMP also suggests that

in-stream operations affecting gravel and sediment could adversely affect bald eagle prey habitat and therefore should be prohibited to the extent possible.

Effects to T&E species from Army activities currently conducted on the Installation (including the action area) were assessed in the BA for the Ongoing Mission (3D/E 1996). Use of the pesticide Malathion in the cantonment area has potential to harm foraging Indiana and gray bats (3D/E 1996). To avoid effects to endangered bats, FLW complies with Reasonable and Prudent Measure No. 4 issued with the Biological Opinion of the Ongoing Mission (USFWS 1996), which states:

Spray Malathion during daylight hours no earlier than one hour after sunrise and no later than one hour prior to sunset between March 15 and October 31

Private utility owners and operators will be required by lease agreement to comply with this restriction.

Analysis of the ongoing mission at FLW included assessment of effects of the electric utility system and concluded there were no adverse effects to any of the three federally-listed species (HBA 1995b; HBA 1996a). However, this was based, at least in part, upon the establishment of special management zones around caves and bald eagle concentration areas (USFWS 1996). The FLW ESMP is designed to preclude adverse effects to T&E species and manage FLW habitat toward conditions needed for recovery of each species. The following ESMP guidelines would specifically apply to electric utility privatization:

- Prohibit development in the 20-acre Restricted Zone around caves
- Prohibit reductions of forest cover in BMZ's without FLW approval
- Prohibit tree removal in cantonment area 16 April – 14 November unless this poses safety hazard
- Prohibit in-stream gravel operations except as necessary
- Restrict human activity in bald eagle concentration areas 1 November – 15 March.

In addition, the ESA insures that effects to T&E species from future replacements, improvements, and extensions are considered when federal actions are planned. Under Alternative 2, T&E species would be afforded protection under the ESA in all future utility-related actions that may have an effect upon a federally-listed species or its habitat.

In conclusion, future utility-related actions would continue to be subject to the provisions of the ESA and the conservation and recovery measures of the ESMP. Under Alternative 2,

the potential for habitat modification to affect federally listed species is the same as that described for Alternative 1. No adverse effects are anticipated to bald eagles, the gray bat or the Indiana bat because responsibility to comply with the guidelines and goals of the ESMP would remain in place.

6.3.2 Health & Safety

Evaluation Criteria D: The FLW *Spill Prevention and Response Plan* (FLW 1998) was reviewed to determine if the divestiture of electric utilities will result in a change in the SPCC regulatory status. The transfer would not affect FLW's current response to SPCC regulations. Regulatory compliance with the National Pollution Elimination Discharge System (under CWA) for the effluent from FLW will continue regardless of utility infrastructure ownership and operator status. However, transfer of electric facilities without a health and safety plan or other stipulations, could allow compromise in human health and safety. Health and safety plans to address all petroleum product storage and use are recommended to maintain the present level of accident prevention and response awareness.

6.3.3 Socio-Economics

Evaluation Criteria E: Currently, operation and maintenance of the electric utilities at FLW are performed by private contractors. These contracts are administered by civil service employees within the federal government.

Under Alternative 2, individuals presently employed by utility contractors at FLW could become unemployed if the company they work for is not successful in a bid to purchase the electric utility. Conversely, the potential exists for these displaced workers to be hired by the new utility companies. If the latter were to occur, it is not known if employee salaries or benefits would change.

No information is available regarding the number of employees that could be affected by such a change. However, it is reasonable to expect that the same or similar number of employees would be required from the private sector if the electric utility is sold. For this reason, no adverse effects are anticipated to the local or regional economic setting.

Evaluation Criteria F: Currently FLW and Army officials expect a substantial improvement in quality of public electric service under the privatization alternative. Other similar projects at FLW (e.g., privatization of the natural gas utility in 1992) and throughout the country support this expectation. Privatization of the existing electrical utility infrastructure, as well as responsibility for operation and maintenance efforts, is expected to result in private or public utility management that exceeds the capabilities of FLW. Benefit is expected in the form of consistent and required levels of capital investment, timely life-cycle repairs and replacements, and greater routine operations and maintenance funds. These factors are expected to improve the quality of electric service delivery to FLW military and non-military consumers, while simultaneously improving overall public safety.

6.3.4 Cultural Resources

Evaluation Criteria G: There will be no effects to archeological sites because these are generally located in river bottoms, where no utilities occur (C. Rea, pers. comm.). Historic sites are located above and below various utility lines at FLW. These buildings could be affected during utility maintenance and repair, especially during replacements, improvements and extensions. Any modification to these buildings or their historical setting would adversely affect their eligibility for the NRHP and their historic value.

Under Alternative 2, the receiving private utility company would not remove or disturb any historical, archeological or other cultural artifacts or objects of antiquity without authorization. The receiving private utility company will notify the Department of the Army of any proposed rehabilitation and structural or landscape alterations to these buildings or properties prior to undertaking action. Any actions potentially affecting cultural resources must adhere to the standards described above, and remain the responsibility of the Army.

Effects to cultural resources from electric utility privatization could be caused by either development of non-culturally significant features in or within the viewshed of the action area, or through alteration of cultural resources themselves. The Proposed Action will do neither.

6.3.5 Cumulative Effects of Alternative 2

Cumulative effects result from direct and indirect past, current, and reasonable foreseeable future actions that are individually minor but may be collectively significant. Past activities on FLW include land use by prehistoric and historic Native Americans, settlement of the area by European immigrants, and development and operation of the area as a military training facility. Effects of past actions and land uses have resulted in the existing condition of FLW as described in Section 4.0 of this document. The ongoing activities in support of the electric utilities at FLW were evaluated in the Ongoing Mission EA (HBA 1995b) and found to produce no significant adverse effects upon the environment.

FLW is currently considering a plan to improve the access road at the West Gate to the Installation, however, it will not have a significant effect upon existing conditions in the project area (HBA 2001). In addition, FLW plans to construct a Technology Research Park and Army Installation Operations Complex (BHE 2001), which also will have no significant effect upon existing conditions. Currently, there are other Army actions undergoing separate evaluation under NEPA; however alternatives for those actions have not been selected, therefore details are unknown and can not be assumed at this time. No future actions, other than those analyzed here, are reasonably foreseeable within the area of analysis.

Under Alternative 2, there would be no significant effects to ecological resources, human health and safety, socio-economics, or cultural resources, because current levels of protection and management would remain in place. The quality of public utility service may be directly and beneficially affected by implementation of Alternative 2, the Proposed Action. Alternative 2 is expected to affect individuals currently employed to operate and maintain the electric utility system at FLW. This potentially adverse effect is not significant at the local or regional scale because approximately the same number of employees will be needed from the private sector before and after privatization. Potential adverse effects to soils from

erosion during repair of buried electric lines would be minor and short-term. There would be no contribution to cumulative effects if the electric utility transfer is implemented as described in this EA. Measures implemented by existing FLW management plans (including the Ongoing Mission Master Plan, INRMP, ESMP, and Draft ICRMP) that mitigate adverse effects to sensitive environmental resources are summarized in Table 6-2.

TABLE 6-2. Measures in current FLW management Plans that protect resources potentially affected by the Proposed Action.

Resource	EA Section	Protective Measures
General	6.3	<ul style="list-style-type: none"> Comply with all applicable federal, state, county, and municipal laws, ordinances, and regulations
Soils, Wetlands and Rivers	6.3.1.1 – 6.3.1.2	<ul style="list-style-type: none"> Maintain all existing soil and water conservation structures and take appropriate measures to prevent or control soil erosion within the right-of-way granted Obtain permission before digging and CWA Section 401 and 404 permits as necessary
T&E Species	6.3.1.3	<ul style="list-style-type: none"> Implement FLW Endangered Species Management Plan Prohibit development in the 20-acre Restricted Zone around caves (BHE 1999) Prohibit reduction of forest cover in BMZs without FLW approval Prohibit tree removal in cantonment area during 16 April – 14 November, except in the case of safety hazard Prohibit in-stream gravel operations except as necessary Restrict human activity in bald eagle concentration areas during winter (1 November – 15 March) Obtain permission for any action that will disturb vegetation, animals, or soils and comply with Section 7 or 9 of the ESA if a listed species may be affected.
Cultural Resources	6.3.4	<ul style="list-style-type: none"> Prohibit removal or disturbance of any historical, archaeological, or other cultural artifacts or objects of antiquity without authorization Maintain properties in accordance with the recommended approaches in the Secretary of the Interior's Standards for Rehabilitating Historic Buildings following approval of the Army and MO SHPO

TABLE 6-2, continued. Measures in current FLW management Plans that protect resources potentially affected by the Proposed Action.

Resource	EA Section	Protective Measures
Health and Safety	6.3.2	<ul style="list-style-type: none"> • Do not dispose of any toxic or hazardous materials within the action area. • Discharge effluent in the action area in conformance with all applicable federal, state and local laws and regulations. • Obtain permission before using herbicides or pesticides. • Prepare and maintain a Government-approved plan for preventing and responding to hazardous waste, fuel and toxic materials spills prior to commencement of operation for any and all utilities

Section 7.0: Conclusions

The effects of all alternatives are compared and summarized in Table 7-1 according to evaluation criteria used.

7.1 ALTERNATIVE 1

The ongoing operation and maintenance of the electric utilities at FLW were evaluated in this and previous environmental assessments and found to have no adverse effect upon any component of the human environment. Under Alternative 1, there would be no change from present (privatization would not occur) and therefore there would be no resultant adverse effect to any resources at FLW. In conclusion, the No Action Alternative will make no contribution to cumulative effects.

7.2 ALTERNATIVE 2

The Proposed Action maintains current levels of protection for all resources at FLW. Alternative 2 will have no significant adverse effects to the human environment because no measurable change from present management conditions will occur.

7.3 SUMMARY OF THE ALTERNATIVES

The No Action Alternative will not lead to improvements in installation efficiency and will not be consistent with DOA mandates. Quality of public service at FLW is expected to decline with time. Therefore, although Alternative 1 would have no environmental effects it would not meet project objectives.

Alternative 2 offers the means to transfer utilities without potential to significantly affect the environment or human health and safety. Implementation of Alternative 2 requires that any and all transactions to transfer utilities be subject to existing plans and regulations currently in place. Through this stipulation, the same level of protection that is currently afforded to resources at FLW will remain following privatization.

TABLE 7-1. Comparison of environmental consequences by alternative and resource area.

Resource		Alternative 1 No Action	Alternative 2 Proposed Action
Ecology	Soils	Minor, short-term adverse effect	Minor, short-term adverse effect
	Wetlands	No Adverse Effect. Current operations are not adverse due to wetland regulations and permit process	No Adverse Effect. Current operations are not adverse due to wetland regulations and permit process
	T&E Species	No Effect. T&E species protected under Sections 7 and 9 of the ESA. FLW T&E guidelines (ESMP) preclude significant adverse effects	No Effect. T&E species protected under Sections 7 and 9 of the ESA. FLW T&E guidelines (ESMP) preclude significant adverse effects
Heath & Safety	Hazardous Substances	No Effect. Effluent and Drinking water permits and SPCC Plan required, and preclude adverse effects.	No Effect. Effluent and Drinking water permits and SPCC Plan required, and preclude adverse effects.
Socio-Economics	Jobs	No Effect	No Adverse Effect
	Quality of Public Service	Non- significant adverse effect	Non- significant beneficial effect
Cultural Resources	Historic properties	No Effect – No Historic buildings occur in action area; archaeological sites are predominantly in river bottoms away from utilities; Draft ICRMP precludes adverse effects	No Effect – No Historic buildings occur in action area; archaeological sites are predominantly in river bottoms away from utilities; Draft ICRMP precludes adverse effects

Section 8.0: Persons and Agencies Contacted

Blackwell, Claire. Director and Deputy State Historic Preservation Officer, Historic Preservation Program. State of Missouri Department of Natural Resources, Jefferson City, Missouri.

Cothorn, Joseph. US Environmental Protection Agency, Region 7. Kansas City, Kansas.

Glueck, Thomas. Wildlife Biologist, Environmental Division, Natural Resources Branch, Fort Leonard Wood, Missouri.

Hansen, Rick (then Acting Director), U.S. Fish and Wildlife Service, Columbia, Missouri Field Office.

Johnson, John. Professional Engineer, BHE Environmental Inc.

Keeling, Michael. Directorate of Public Works Operations Branch, Fort Leonard Wood, Missouri.

Murrell, Scott. Division Chief, Environmental Division, Fort Leonard Wood, Missouri.

Myers, Scott. Architectural Historian, Historic Preservation Program. State of Missouri
Department of Natural Resources, Jefferson City, Missouri.

Missouri Department of Natural Resources Historic Preservation Program. State of Missouri
Department of Natural Resources, Jefferson City, Missouri.

Rea, Ralph R. Callaway, Archeologist, Historic Preservation Program. State of Missouri
Department of Natural Resources, Jefferson City, Missouri.

Stenger, Carl. Environmental Specialist, Fort Leonard Wood, Missouri.

U.S. Fish and Wildlife Service, Columbia Field Office. Columbia, Missouri.

Ziehmer, Robert. Policy Coordination Section, Missouri Department of Conservation, Jefferson
City, Missouri.

Section 9.0: Literature Cited

- BHE Environmental, Inc. 1998. Informal Meeting Notes re: Utilities Privatization at Fort Leonard Wood, Dated 10 November 1998.
- BHE Environmental, Inc. 1999. Endangered Species Management Plan for the Indiana Bat (*Myotis sodalis*), Gray Bat (*Myotis grisecens*) and Bald Eagle *Haliaeetus leucocephalus*) Fort Leonard Wood, Missouri. U. S. Army Maneuver Support Center and Fort Leonard Wood, Missouri.
- BHE Environmental, Inc. 2000. Environmental Screening Document for Utilities Privatization, Electric Distribution System at Fort Leonard Wood, Missouri.
- BHE Environmental, Inc. 2001. Environmental Assessment for the Technology Park and Industrial Operations Complex at Fort Leonard Wood, Missouri.
- Black and Veatch. 1978. Water and Air Pollution Abatement Survey, Fort Leonard Wood, Missouri.
- Fort Leonard Wood. 1998. Fort Leonard Wood, Missouri Spill Prevention & Response Plan. Fort Leonard Wood, Missouri.
- Fort Leonard Wood. 2000. Integrated Natural Resources Management Plan 2001-2005. U.S. Army Maneuver Support Center and Fort Leonard Wood, Missouri. Gene Stout and Associates, Loveland, Colorado.
- Gallay, D., R. Craig, T. Muller, E. O'Keiff, and R. Salgado. 1998. The Fort Leonard Wood Warehouse District Initiative: An Assessment. Contract DACW31-94-D-0092 by Logistics Management Institute, McLean, Virginia 22102.

- Harland Bartholomew & Associates, Inc. 1992. Report of Findings-Installation Building Survey. Contract DACA 41-86-D-0064. Prepared for Department of the Army, Kansas City District, Corps of Engineers.
- Harland Bartholomew & Associates, Inc. 1995a. Wetlands Inventory for Fort Leonard Wood, Missouri. Contract No. DACA41-89-C-0193 U.S. Army Engineer Center and Fort Leonard Wood.
- Harland Bartholomew & Associates, Inc. 1995b. Final Environmental Assessment of the Master Plan and Ongoing Mission. Contract No. DACA41-89-C-0193. U.S. Army Engineer Center and Fort Leonard Wood, Missouri.
- Harland Bartholomew & Associates, Inc. 1996a. Biological Assessment of the Master Plan and the Ongoing Mission. Contract No. DACA41-89-C-0193. U.S. Army Engineer Center and Fort Leonard Wood.
- Harland Bartholomew & Associates, Inc. 1996b. Biological Assessment: Relocation of U.S. Army Chemical School and the U.S. Army Military Police School to Fort Leonard Wood, Missouri. U.S. Corps of Engineers, Kansas City, Kansas 64106.
- Harland Bartholomew & Associates, Inc. 1997. Environmental Impact Statement Relocation of U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood. Volumes I-IV.
- Harland Bartholomew & Associates, Inc. 2001. Environmental Assessment for the West Gate Access Road. Prepared for the Missouri Department of Transportation.
- Missouri Department of Natural Resources. 1982. Springs of Missouri. Prepared by the Division of Geology and Land Survey Water Resources. Report 29.
- Phenix Environmental, Inc. (PEI) 1991. Environmental Assessment for the Proposed MOGAS Pipeline Project. Missouri Gas Co. Tulsa, Oklahoma 74119.
- Profitt, R. 1993. Land Condition-Trend Analysis Data Summary and Analysis Report for Fort Leonard Wood, Missouri. U.S. Army Engineers Center & Fort Leonard Wood Natural Resource Office. ATZT-DPW-EE Fort Leonard Wood, Missouri.
- 3D/Environmental (3D/E). 1996. Biological Assessment of the Master Plan and Ongoing Mission for the U.S. Army Engineer Center and Fort Leonard Wood. Prepared by 3D/Environmental for Harland Bartholomew & Associates, Inc. under the direction of the Kansas City District, Corps of Engineers Contract No. DACA41-89-0193.
- 3D/Environmental (3D/E). 1997. Biological Assessment of the Relocation of the U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood, Missouri. Prepared by 3D/Environmental for Harland Bartholomew & Associates, Inc. under the direction of the Kansas City District, Corps of Engineers.
- U.S. Army Corps of Engineers. 1997. Environmental Impact Statement re: Relocation of U.S. Army Chemical School and the U.S. Army Military Police School to Fort Leonard Wood, Missouri.

U.S. Army TRADOC. 1999. Programmatic Environmental Assessment: Privatization of the Utility Systems. U.S. Army Training and Doctrine Command, Fort Monroe Virginia 23651.

U.S. Fish and Wildlife Service. 1996. Biological Opinion addressing the Master Plan and Ongoing Mission for the U.S. Army Engineer Center and Fort Leonard Wood, Missouri. Memo to Lt. Col. Pawlowski from G.D. Frazer dated 31 December 1996 (Log No. 96-R3-CMFO-01).

U.S. Fish and Wildlife Service. 1997. Biological Opinion addressing the Relocation of U.S. Army Chemical School and U.S. Military Police School to Fort Leonard Wood, Missouri. Memo to Lt. Col. Pawlowski from G.D. Frazer dated 4 February 1997 (Log No. 96-R3-CMFO-02).

Whalley, L., R. Edging, S.D. Smith, A. Smith, D. Mather, and S. Loechl. In prep. Pre-Columbian Archeological Overview. *In* The Integrated Cultural Resource Management Plan for Fort Leonard Wood, Missouri. U.S. Army Construction Engineering Research Laboratories, Champaign, Illinois.

Appendix A

Maps of Electric Utility Infrastructure at Fort Leonard Wood